$$=\tfrac{1}{2}\left[\frac{1}{n-1}+\frac{1}{3(n-3)}+\frac{1}{5(n-5)}+\text{.........}\frac{1}{(n-1)1}\right].\quad \text{Q. E. D.}$$

Also solved by G. W. Greenwood, G. B. M. Zerr, and the Proposer.

239. Proposed by J. J. KEYES, Fogg High School, Nashville, Tenn.

Solve $\sqrt[4]{(41+x)}+\sqrt[4]{(41-x)}=4$.

Solution by W. L. TRYON, Cornell University, Ithaca, New York.

Denote the equation by $m+n=4$ ....(1). Then $m^4+n^4=82$..........(2).

Raising (1) to the fourth power, subtracting (2), and dividing by 2, we obtain

$$2mn(m+n)^2-m^2n^2=87,$$

$$i.\ e.,\qquad m^2n^2-32mn=87.$$

$\therefore\quad mn=3$ or 29.

$m=1,\ 3,\ 2\pm5i$.

$\therefore\quad 41+x=1,\ 81,\ 41\pm840i$.

$x=\pm40,\ \pm840i$.

Also solved by P. S. Berg, G. W. Greenwood, J. J. Keyes, F. P. Matz, J. Scheffer, J. Edward Sanders, Jacob Westlund, and G. B. M. Zerr.

240. Proposed by F. P. MATZ, Sc. D., Ph. D.

Solve $a^2x+b^2y=ax^2+by^2=x^3+y^3$.

I. Solution by G. W. GREENWOOD, M. A., Professor of Mathematics and Astronomy, McKendree College, Lebanon, Ill.

We have $(x^3+y^3)(a^2x+b^2y)=(ax^2+by^2)^2$, from which we obtain $xy=0$, and $ay=bx$. Substituting in either of the original equations we obtain for x, y the pairs of values $(0, 0)$, (a, b).

II. Solution by A. H. HOLMES, Brunswick, Maine.

From $a^2x+b^2y=ax^2+by^2$ we have $ax(a-x)=by(y-b)$ .... (1).

From $ax^2+by^2=x^3+y^3$ we have $x^2(a-x)=y^2(y-b)$ ....(2).

Dividing (1) by (2), $\dfrac{a}{x}=\dfrac{b}{y}$. $\quad\therefore y=\dfrac{b}{a}x$.

$$\therefore a^2x-ax^2=\frac{b^3x^2}{a^2}-\frac{b^3x}{a}.\qquad \therefore x=\frac{a^4+ab^3}{a^3+b^3};\ y=\frac{b}{a}x=\frac{a^3b+b^4}{a^3+b^3}.$$

Also solved by M. R. Beck, M. E. Graber, B. F. Finkel, J. E. Sanders, Elmer Schuyler, G. B. M. and the Proposer.

241. Proposed by L. E. NEWCOMB, Los Gatos, Cal.

Sum to infinity $\frac{1}{2}+\frac{1}{3}+\frac{1}{8}+\frac{1}{30}+\frac{1}{144}+\frac{1}{840}+$..........(1).

Solution by ELMER SCHUYLER, Brooklyn, New York.

Separate the denominators into their prime factors; then (1) becomes

$$\frac{1}{1.2}+\frac{1}{1.3}+\frac{1}{1.2.4}+\frac{1}{1.2.3.5}+\frac{1}{1.2.3.4.6}\text{..........}(2).$$